

A marked-up version of this claim appears in Appendix I.

REMARKS

Claims 12-33 are pending.

Claims 12-33 are rejected.

Claim 20 is amended.

Applicant requests the reconsideration of the rejections of claims 12-33 for the reasons discussed below.

I. Rejection of claim under 35 U.S.C. §102(b)

The Examiner rejected pending claim 20 as being anticipated by Uchida (Japanese Patent 56-073579). Applicant contends that the current state of claim 20 contains limitations that are distinguished from the matters disclosed in Uchida. For instance, claim 20 now requires a negative pressure device defining a vacuum area on more than one side of a wafer. Uchida is not only silent concerning defining a vacuum area on more than one side of its workpiece but actually teaches away from that by requiring its suction nozzle to contact the coating on one side of the workpiece. In disclosing the exact opposite of claim 20's limitation, Uchida cannot be read to anticipate that claim.

II. Rejection of claims under §103

The Examiner rejected groups of claims based on one of two main arguments addressed separately below.

A. Rejection of claims based on Honda in combination with Matsumura or Isono

The Examiner rejected claims 12-14 and 17-33 as being obvious in light of Honda (Japanese Patent No. 8-005825) in combination with either Matsumura (Japanese Patent No. 5-175117) or Isono (Japanese Patent No. 2-157763). Applicant contends that a careful consideration

of the teachings therein discourage one of ordinary skill in the art from combining, especially given the contradictions of the references.

1. Rejection of claims based on Honda in combination with Matsumura

a. The affirmative teachings of Honda and Matsumura discourage combination

First focusing on the Honda/Matsumura combination, the Examiner argued that it would be obvious to use Matsumura's solvent in Honda's device. However, Honda indicates that its resin must be treated with a developer, avoid light, and undergo a developing process in order to be removed. One of ordinary skill in the art is in no way guided as to whether merely applying Matsumura's solvent will be sufficient to remove Honda's resin. If Matsumura's solvent did not remove Honda's resin, then process time, money, and effort would be wasted. Moreover, if Matsumura's solvent did remove Honda's resin, other problems arise for the artisan. Specifically, there is a risk of removing resin that is too far away from the periphery. Honda depends on a combination of its developing material and lithographic patterning to control where the resin is removed. If Matsumura's solvent worked on Honda's resin, an artisan would lose at least some of that control. Thus, whether or not Matsumura's solvent worked, one of ordinary skill in the art would be wary of making the substitution suggested by the Examiner.

Additionally, the Examiner's proposing such a combination ignores the main point of Honda, which is to cause equal development of the resin, regardless of whether the resin is on the substrate's edge or the substrate's interior. Honda achieves this by using concentrated developer at the substrate's edge to counteract its thicker resin. Because the substrate's edge is equally developed in comparison to the substrate's interior, it follows that the resin-removal process may be applied equally across Honda's substrate, with no need for a specially-configured cleaning device. (See Honda translation at ¶0007, page 4.) However, it is just such a cleaning device which Matsumura proposes. As a result, Honda teaches one of ordinary skill in the art that the devices, materials, and methods in Matsumura, are unnecessary. Thus, one of ordinary skill in the art would be loath to combine such references.

b. The conflicts between Honda and Matsumura discourage combination

Additionally, there are conflicts between the references that further discourage combination. Matsumura, for instance, discourages gently spraying solvent onto the substrate for fear of stale solvent accumulating, resulting in a film “swollen by solvent.” (Matsumura translation at ¶0031.) Rather, Matsumura proposes a faster spray of solvent to ensure an adequate supply of fresh solvent and a fast, efficient removal process. (*Id.*) This is in contrast to Honda, which teaches “dripping” its developer onto its substrate so that the developer may accumulate at (or soak) the resin’s edge. (Honda translation at ¶0006; *see also* FIG. 3 (illustrating solvent swelling at the substrate’s edge).) Thus, Honda and Matsumura are in direct contradiction in terms of the desired dispensing rate and amount of fluid accumulation.

As another example, Honda suggests that its vacuum-suction part (element 11) is sufficient to draw excess developer. (*See* Honda translation at ¶0006, FIG. 3.) Matsumura, on the other hand, teaches one of ordinary skill in the art that both suction and a blowing action are used to accommodate the workpiece. (Matsumura at the “Makeup” section, ¶0010; ¶0018, ¶0023; FIG. 2.) Thus, one of ordinary skill in the art would conclude that either Matsumura is needlessly complex or that Honda is not complete enough to operate properly. Either way, such an artisan would be discouraged from using one or the other as part of a combination, especially when combining the two with each other is proposed.

Given the rife contradictions between the references, Applicant contends that the Examiner could not focus on particular aspects of each reference and ignore the ramifications of the legion of conflicting aspects without the benefit of hindsight gained from the current application. Such a standard is not a proper basis for rejecting these claims.

2. Rejection of claims based on Honda in combination with Isono

The Examiner’s Honda/Isono combination suffers similar problems. The same reasons discussed above that discourage one of ordinary skill in the art from using Matsumura’s solvent in Honda’s device apply with equal force against using Isono’s solvent. Another similar problem is the conflict between the matters taught in Isono and those in Honda. One such conflict is

brought to light by the Examiner's own statements and raises questions about the ability to combine Isono with any reference.

Honda's processing device 10 defines an opening such that the housing is distal from the substrate. (Honda at FIG. 3.) Isono, in contrast, not only illustrates the exact opposite configuration but also actively teaches in favor of its configuration. For example, Isono contains several instances referring to enclosing the edge of its substrate. (Isono translation at section entitled "Means to Resolve Problems," section entitled section entitled "Effects," and section entitled "Effectiveness of Invention.")). Isono also goes into further detail, describing how sealing plates seal the edges such that the substrate edges are sealed off from the outer air. (*Id.* at 3. top ¶.) Isono's figure 1 further emphasizes this teaching. Thus, as with Matsumura, the only way to reconcile or ignore the significant differences between Honda and Isono and sift through them to arrive at a combination that even arguably serves as the basis for a rejection is with the hindsight gained from the current application.

Further, although referring to another patent, the Examiner made statements in the latest Office Action that apply to Isono. Specifically, the Examiner pointed out that, when a substrate-cleaning apparatus contacts the substrate, it can cause excessive wear of the apparatus, excessive cleaning of the apparatus, and damage to the substrate. (Office Action dated 2/28/01 at 4-5, 7.) The Examiner's statements apply to Isono's sealing plates that enclose the edge of the substrate. Thus, assuming *arguendo* that the Examiner's beliefs echo the sentiments of one of ordinary skill in the art, such an artisan would be discouraged from using that reference as a source for modifying the disclosure of another reference. Hence, the Honda/Isono combination fails as a basis for rejection as does Honda/Matsumura.

B. Rejection of claims based on Uchida in combination with Honda

The Examiner rejected claims 14-19 and 21-33 as being obvious in light of Uchida in combination with Honda. However, Applicant has previously indicated that those two references are rife with contradictions that would discourage combination. In addition, Applicant has previously pointed out that both Uchida and Honda discourage modification. Such analysis has been presented in Applicant's Response to the Office Action dated 3/21/00 and in Applicant's

Response to the Office Action dated 9/6/00. Applicant will not repeat those arguments here in order to avoid redundancy. Nevertheless Applicant contends that the Uchida/Honda combination is untenable for the reasons stated in those Responses.

In replying to Applicant's argument, the Examiner found motivation to combine by focusing on the similarities between the references. The Examiner further downplayed Uchida's teachings and argued that parts of Uchida that would defeat an obviousness rejection could be ignored in favor of what the Examiner assumed to be conventional techniques in the art. The Examiner then articulated additional reasons for modifying Uchida's teachings according to Honda. Finally, the Examiner announced that the proposed modification was within the level of ordinary skill in the art. Applicant contends that each stage of the Examiner's reasoning is flawed. Moreover, assuming *arguendo* the Examiner is correct in disregarding major portions of Uchida, that puts into question the very basis for rejecting the claims.

1. The Examiner's focus on the alleged similarities between Uchida and Honda indicates a failure to consider the references as a whole.

Applicant asserts that, in focusing on the references' similarities, the Examiner has ignored the blatant differences between the references, and that doing so is legally improper given case precedent:

When prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. There must be "something in the prior art *as a whole* to suggest the desirability, and thus the obviousness, of making the combination". . . . Not only must the claimed invention as a whole be evaluated, but so also must the references *as a whole*

....

(*Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 227 U.S.P.Q. 543, 551 (Fed. Cir. 1985) (citations omitted) (emphasis added). See also *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 U.S.P.Q. 303, 308, 311 (Fed. Cir. 1983) (requiring that section 103 references be assessed in their entireties), *cert. denied*, 469 U.S. 851 (1984). These cases are provided in an appendix to this Amendment and Response.)

Applicant contends that the Examiner has failed to consider the Uchida and Honda references *as a whole*. Instead, the Examiner has disregarded contradictions between the references and selected only the excerpts believed to be necessary for rejection. Applicant asserts that the Examiner's ability to do so is inappropriately based on the hindsight gained from the knowledge of Applicant's invention.

2. The Examiner has mischaracterized Uchida

The Examiner's characterization of the Uchida reference indicates an attempt to downplay the true import of that reference. For instance, the Examiner goes only so far as to admit that "Uchida et al do not show the apparatus being configured to be spaced above the edge bead" and that "Uchida et al show positioning of the apparatus in the coating material." (Office Action dated 2/28/01 at 4, 7.) Applicant contends that Uchida does more than merely provide an illustration (see Uchida's FIG. 3) to the extent described above. Rather, Uchida affirmatively expresses that its suction nozzle "contact the coating solution." (Uchida translation at 3.) The Examiner's failure to accurately characterize and address the express teachings of Uchida indicates a failure to meet the *prima facie* burden for rejection using that reference

3. The Examiner's has failed to adequately support the assumption concerning what is conventional in the art.

Although purporting to rely on Uchida to reject the claims, the Examiner then suggested that one of ordinary skill in the art would disregard the part of Uchida expressly teaching contact between the vacuum device and the workpiece. The ability to do so would allegedly result from knowledge of what the Examiner understands to be a "conventional apparatus." The Examiner further posited that such an apparatus is exemplified in Honda, in which there is no contact between the vacuum device and the workpiece.

However, at least one other reference cited by the Examiner casts doubt on the Examiner's ability to announce what is "conventional" in the art and therefore casually disregard parts of Uchida's disclosure. As mentioned above, Uchida teaches contacting its device to the substrate

during operation, thereby indicating that, at least from 1979-1981 (Uchida's filing year to Uchida's issue year) such contact was acceptable. Significantly, one of the Examiner's own references suggests that this technique was acceptable long after that: Isono also teaches direct contact between its device and the substrate. (Isono at FIG. 1.) Moreover, Isono was not filed until 1988 and did not issue until 1990. As a result, these references indicate that suction device-to-workpiece contact has been a longstanding technique acceptable to one of ordinary skill in the art. At the very least, these references indicate that there is no clear direction in the art concerning such contact. Either interpretation suggests that the Examiner should not have so easily dismissed selected portions of Uchida, especially when such portions conveniently defeat the Examiner's argument.

4. The Examiner's speculation concerning motivation to modify Uchida is refuted by Uchida itself.

In attempting to come up with reasons for ignoring portions of Uchida that the Examiner found problematical, the Examiner guessed that motivation for modifying Uchida's device (i.e. countering Uchida's express teachings) would come from a desire to prevent (1) excessive wear and tear on the vacuum/dispensing device; (2) excess cleaning of the device; and (3) damage to substrate. Uchida itself, however, suggests that at least one of the three concerns articulated by the Examiner are not an issue, and the very art cited by the Examiner suggests that the other two are not issues sufficient to warrant modification either.

Concerning the Examiner's belief that one of ordinary skill in the art would recognize the "constant need for cleaning" Uchida's device (Office Action dated 2/28/01 at 7), it is noteworthy that Uchida acknowledges the cleaning/clogging issue as a problem with prior art devices (Uchida at ¶4 of part 3, latest translation) and purports to solve that problem with its device (*Id.* at last ¶ of part 3). Hence, counter to the Examiner's assumption, one of ordinary skill in the art would be led to believe that Uchida would *not* need constant cleaning.

As for the concern that the suction device/workpiece contact creates wear and tear on the device and risks damaging the substrate, Applicant asserts that such contact has been a long-accepted technique in the art -- spanning at least from the time of Uchida to the time of Isono (cited by the Examiner). As a result, such concerns are unfounded and therefore would not motivate one

of ordinary skill in the art to deviate from the express teachings of Uchida, especially when such deviation involves accepting teachings that contradict Uchida.

5. The Examiner's "deeming" the level of ordinary skill in the art is untenable

The Examiner also "deemed" that modifying Uchida's device according to Honda – specifically by spacing Uchida's vacuum device from the workpiece – is within the level of ordinary skill in the art. (Office Action dated 2/28/01 at 5.) It is unclear whether the Examiner's statement is a conclusion based on the points previously made by the Examiner (and mentioned above) or whether this is another basis supporting the rejection. If the Examiner's statement is a conclusion based on the points mentioned in parts 1-4 above, then Applicant submits that the Examiner's points have been refuted and this conclusion is untenable. If the Examiner's statement is another basis supporting the rejection, Applicant contends that modifying Uchida's device according to Honda cannot be deemed to be within the level of ordinary skill in the art because such a modification violates the express language and illustration of Uchida, which teach contacting Uchida's vacuum device and the workpiece. Either alternative results in the conclusion that the Examiner's "deeming" concerning the level of ordinary skill in the art does nothing to help meet the *prima facie* burden for rejection.

6. The Examiner's criticism of a major portion of Uchida calls into question whether Uchida is a viable component in an obviousness rejection.

By arguing that one of ordinary skill in the art would be motivated to ignore major portions of Uchida, the Examiner necessarily calls into question whether such an artisan would be motivated to use any portion of Uchida in combination with any reference, let alone with a contradictory reference such as Honda. If the Examiner is correct, and major portions of Uchida are no longer "conventional" and there are valid reasons for one of ordinary skill in the art to disregard these portions, then such an artisan would be discouraged from making any reference to Uchida. Thus, the Examiner's reasoning in favor of ignoring portions of Uchida support ignoring all of Uchida, thereby defeating the Examiner's own conclusion.

Conclusion

In light of the above amendments and remarks, Applicant submits that claims 12-33 are allowable over the applied references. Therefore, Applicant respectfully requests reconsideration of the Examiner's rejections and further requests allowance of all of the pending claims. If there are any matters which may be resolved or clarified through a telephone interview, the Examiner is requested to contact Applicant's undersigned attorney at the number indicated.

Respectfully submitted,



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Appendix I
Marked-up version of claims indicating current amendments

20. (Thrice amended) A material removal system for a wafer, comprising:

a negative pressure device defining a vacuum area [intersecting] on more than one side of
said wafer while said device is in an operational position; and
a solvent dispenser intersecting said vacuum area and aligned with an edge of said wafer
while said device is in said operational position.

Appendix II

Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 227 U.S.P.Q. 543 (Fed. Cir. 1985);

W.L. Gore & Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).